

Surveys for Significant Plant Resources and Related Vegetation Types for the Missoula Field Office of the Bureau of Land Management:

2006 Survey Results

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INTRODUCTION

The Montana Natural Heritage Program (MTNHP) conducted limited surveys for plant Species of Concern (SOC) and significant vegetation types in 2006 on lands managed by the Missoula BLM Field Office. This was the second year of surveys conducted by MTNHP in target watersheds on the Field Office. To date, surveys have primarily focused on the Hoodoo Mountains and Flint Creek watersheds and secondarily in the Rock Creek, Marcum Mountain, Garnets and Chamberlain Wales watersheds. Results presented below are for 2006 only and highlight the areas that were the primary focus of surveys during the field season. Common names and synonyms for all plant species listed in the results are presented in Appendix A.

SURVEY AREAS AND RESULTS

Cottonwood Meadow [T11N, R10W, sec 10 nw1/4 and sec 3 s1/2]

Cottonwood Meadow at the upper reaches of Cottonwood Creek was surveyed on July 12 and 21, 2006. No Montana plant Species of Concern (SOC) were located in the area, though two Potential Species of Concern, *Agoseris lackschewitzii* and *Carex neurophora* were documented. The meadow is an intact, high-quality example of a montane-subalpine mesic and wet meadow complex at an elevation of approximately 2,012 m (6,600 ft) and is unique for BLM-managed lands in the state, but is not uncommon in mountainous areas of Montana.

No additional surveys for vascular plant SOC are recommended for Cottonwood Meadow or the upper stretch of Cottonwood Creek. However, reaches of Cottonwood Creek from T11N, R10W, sec 3 nw1/4 and further downstream should be surveyed.

Dominant Wetland Vegetation Types (Hansen et.al. 1995)

Deschampsia cespitosa H.T.

Carex utriculata (*C. rostrata*) H.T.

NatureServe Ecological System Type

Rocky Mountain Alpine-Montane Wet Meadow



Cottonwood Meadow



Agoseris lackschewitzii

Dominant and Associated Plant Species

-Plants are listed by lifeform. Their relative abundance is also noted. Numbers in parentheses are collection numbers by S. Mincemoyer and are deposited at the University of Montana Herbarium (MONTU).

Gramminoids

Agrostis exarata – occasional (613)
Alopecurus alpinus – occasional (612)
Carex canescens – infrequent
Carex neuophora – infrequent (608)
Carex scopulorum var *bracteosa* – occasional (609)
Carex utriculata – frequent
Deschampsia cespitosa – abundant
Eriophorum chamissonis – infrequent (611)
Poa leptocoma – infrequent (607)
Puccinellia pauciflora – occasional (602)
Trisetum wolfii – occasional (610)

Forbs

Agoseris lackschewitzii - occasional (604)
Aster foliaceus – frequent

Aster occidentalis – occasional
Dodecatheon pulchellum – occasional
Epilobium alpinum – occasional
Epilobium ciliatum – frequent
Galium bifolium – infrequent (606)
Geum macrophyllum – occasional
Habenaria dilatata – occasional
Ligusticum tenuifolium – occasional
Mimulus moschatus – occasional (605)
Pedicularis groenlandica – frequent
Polygonum bistortoides – frequent
Senecio sphaerocephalus – frequent

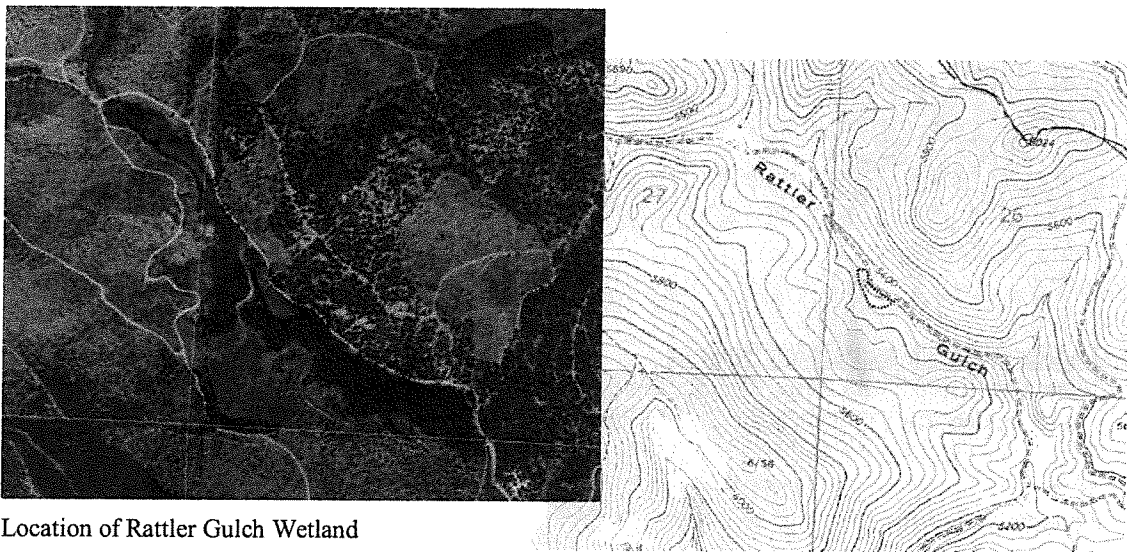
Shrubs

Salix barclayi – infrequent (614)
Salix boothii – infrequent (617)
Salix planifolia – rare (618)

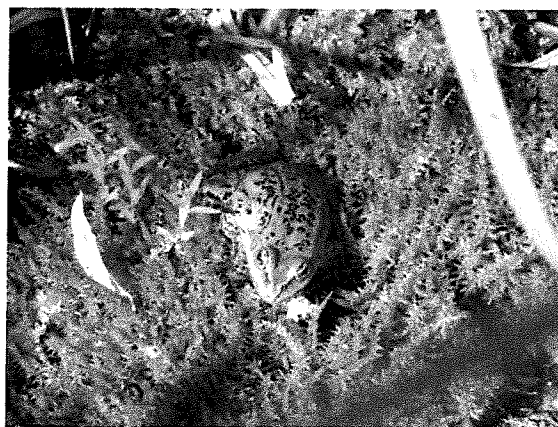
Rattler Gulch Wetland [T12N, R13W, sec 26 sw1/4]

This un-named, montane wetland is located adjacent to Rattler Gulch Road at 1,646 m (5400 ft.) The approximately 1 hectare (2.6 ac.) wetland on Bureau of Land Management land occurs in an area of checkerboard ownership with Plum Creek Timber Company lands. The wetland was surveyed on July 20, 2006. No plant SOC were located in the area. However, the wetland does provide habitat for Columbia Spotted Frogs (*Rana luteiventris*) (two observed during the survey) and is utilized by moose as evidenced by the observed “pellets”. The wetland vegetation occurs in a mosaic pattern of shrub-dominated communities interspersed with herbaceous-dominated areas. Though invasive weeds are absent from the wetland, spotted knapweed (*Centaurea maculosa*) is abundant on the surrounding dry hillsides and roadways.

No additional surveys for vascular plant SOC are recommended for this area.



Location of Rattler Gulch Wetland



Columbia Spotted Frog in Rattler Gulch Wetland

Dominant Wetland Vegetation Types (Hansen et.al. 1995)

Salix drummondiana/*Carex utriculata* (*C. rostrata*) H.T.

NatureServe Ecological System Type

Rocky Mountain Subalpine-Montane Riparian Shrubland



Rattler Gulch Wetland

Dominant and Associated Species

-Plants are listed by lifeform. Numbers in parentheses are collection numbers by S. Mincemoyer and are deposited at the University of Montana Herbarium (MONTU).

Trees

Populus tremuloides

Shrubs

Lonicera involucrata

Rhamnus alnifolia

Ribes hudsonianum

Rosa spp.

Salix bebbiana

Salix drummondiana

Salix geyeriana

Salix planifolia

Gramminoids

Alopecurus alpinus

Calamagrostis canadensis

Carex leptalea (SAM-616)

Carex utriculata

Glyceria striata

Ferns and Allies

Equisetum arvense

Forbs

Angelica arguta

Aster foliaceus

Aster modestus

Epilobium ciliatum

Galium bifolium

Geum macrophyllum

Habenaria dilatata

Mimulus guttatus

Parnassia fimbriata

Petasites sagittatus

Pyrola uniflora

Saxifraga odontoloma

Veronica americana

Bear Creek [T12N, R14W, sec 34 sw1/4 and T11N, R14W, sec 3 nw1/4]

On June 15, surveys were conducted for *Lesquerella carinata* var. *languida* in the Bear Creek drainage in two areas previously known to contain populations of the taxa. On the west-side of the drainage along Felan Gulch, a small area on the east end of a previously mapped subpopulation was searched. Widely scattered plants of the target taxa were observed in the dry grassland dominated by *Elymus spicatus*, *Erigeron compositus* and *Centaurea maculosa* along with scattered *Pinus ponderosa*, *Juniperus scopulorum* and *Purshia tridentata*. On the east-side of Bear Creek just north of Packer Gulch, another small area was surveyed. Twelve individuals of *L. carinata* var. *languida* were observed in a ponderosa pine woodland dominated by an understory of *Elymus spicatus*, *Centaurea maculosa*, *Purshia tridentata* and *Achillea millefolium*.

Additional surveys for *L. carinata* var. *languida* are needed in the Bear Creek drainage and across the southern end of the Garnets to determine the current status of this SOC. Spotted knapweed appears to have invaded most of the habitat occupied or formerly occupied by this SOC and it is now a dominant vegetation component on dry hillsides in the area. The limited surveys in 2006, which observed only small numbers of plants, underscore the need for comprehensive surveys and population monitoring to determine if spotted knapweed is having a significant negative impact on populations of this taxa.

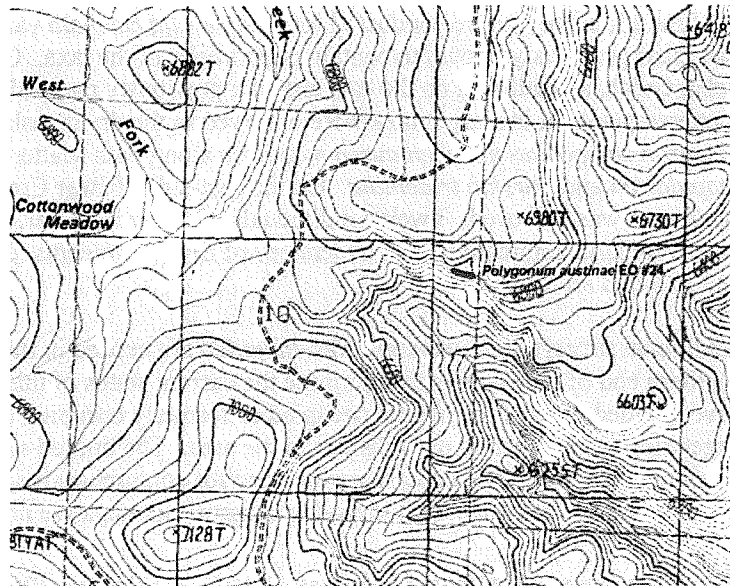
Wet Mulkey-Walker Gulches [T12N, R13W sec 32 n1/2 and T11N, R13W, sec 6 ne1/4]

Surveys were conducted for plant SOC on June 15, primarily for *Lesquerella carinata* var. *languida*, a taxa that occurs in the vicinity, in limited areas of Wet Mulkey and Walker Gulches. A south-facing grassland at approximately 1,585 m (5,200 ft) along Walker Gulch (sec. 32 n1/2) was searched for this SOC, though no occurrences were located. Near the junction of Dry Mulkey and Wet Mulkey Gulches, ten plants of the target taxa were observed in an incomplete survey, south of a previously mapped subpopulation.

As mentioned above, additional surveys and monitoring of this taxa are needed to map its overall extent along the south end of the Garnets and to determine the impacts of spotted knapweed invasion into its habitat.

Gallagher Creek Drainage [T11N, R10W, sec 10 ne1/4 and sec 11 nw1/4]

Rocky areas and scree slopes in the upper end of the Gallagher Creek drainage were searched on July 13 for *Polygonum austinae* (Austin's knotweed), a plant SOC. One new population was located (EO#24). The site is on a sparsely-vegetated, south-facing, scree slope. Associated species include *Ribes lacustre*, *Agastache urticifolia*, *Phacelia* sp., *Artemisia ludoviciana*, *Heuchera cylindrica*, *Elymus elymoides* and *Penstemon* sp. No exotic, invasive species were noted at the site. Population size was estimated at 300 individuals. Additionally, one individual of *Mimulus suksdorfii*, a Potential Species of Concern, was noted growing from a crevice near the base of the cliffs and adjacent to the *P. austinae* location. It is likely that additional plants of the annual *M. suksdorfii* exist in nearby suitable habitat, such as exposed rocky areas or mesic grasslands. However,



as only one plant of this annual species was observed it is not considered to be of any conservation value.

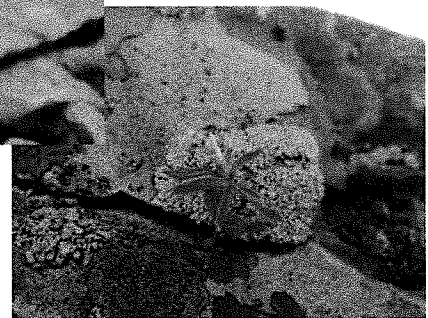


Close-up and distant photos of the observed habitat

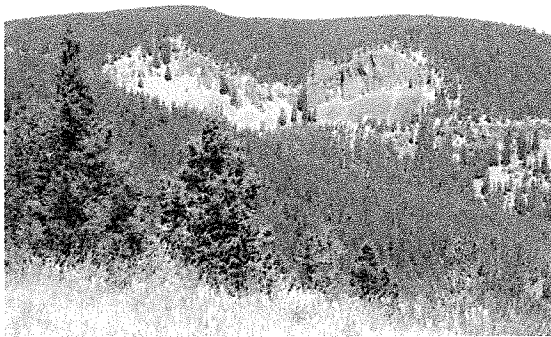
Additional surveys of the scree habitat in the Gallagher Creek drainage and elsewhere in the Hoodoo Mountain area are needed to determine how widespread and abundant *P. austinae* is in the area. It appears likely that additional surveys will find that the species is widespread across the area in appropriate habitat. If so, removal of the species from SOC status in Montana may eventually be warranted.



Polygonum austinae

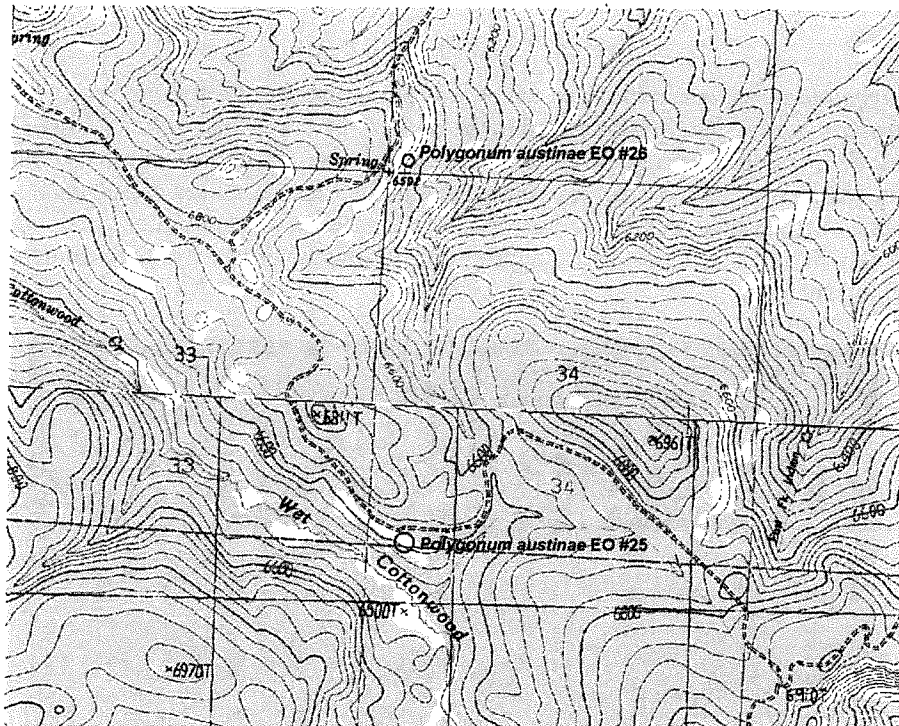


Mimulus suksdorfii



Green Park [T12N, R10W, sec 34, sw1/4; T11N, R10W, sec 3, nw1/4]

This area was surveyed on July 21. One new occurrence of *Polygonum austinae* (EO#25) was located in the sparsely-vegetated, stony soils. The estimated population size in 2006 is 150 plants. Associated species include *Poa secunda*, *Sedum stenopetalum*, *Phlox* spp. and the typical form of *Polygonum douglasii*. Habitat similar to this site appears to be common in the area, and it is likely additional occurrences of *P. austinae* exist in the Hoodoo Mountains.



Location of *Polygonum austinae* EO #25 (Green Park) and EO #26 (West Fork Spring)



Polygonum austinae habitat at Green Park

West Fork Spring [T12N, R10W, sec27 sw1/4]

This area was surveyed on July 21. One new occurrence of *Polygonum austinae* (EO #26) and one new occurrence of *Polygonum polygaloides* ssp. *confertiflorum* were located in the area just below and east of West Fork Spring above the steep, rocky slope. The site is an east-facing slope at 1,982 m (6,500 ft) on exposed gravels and shallow soils with sparse vegetation. The estimated population size of *P. austinae* in 2006 is 500 plants. However, the majority of the plants dried up before flowering. Associated species include *Festuca idahoensis*, *Antennaria luzuloides*, *Achillea millefolium* and *Poa secunda*. Habitat similar to this site appears to be common in the area, and it is likely additional occurrences of *P. austinae* exist in the area. See the map under Green Park on the preceding page for the occurrence locations at West Fork Spring.

Polygonum polygaloides ssp. *confertiflorum*, which was also located at West Fork Spring and at one of the 2005 *P. austinae* sites (EO #22), was added to the revised plant SOC list in June, 2006. It was added to the list at that time due to its current global/state ranks, however, its status is in need of further review to clarify its abundance and taxonomic/morphologic distinctiveness within the *P. polygaloides* complex. At this time, none of the known locations across the state for the taxa have been mapped in MTNHP databases. These will be mapped, if deemed appropriate, following a review of herbarium material and other available information.



Polygonum austinae habitat at West Fork Spring

Mannix Park [T11N, R9W, sec 18, s1/2]

This montane meadow was surveyed on July 25 by Steve Cooper and Scott Mincemoyer for plant SOC, primarily *Botrychium* spp. (moonworts). The grassland habitat dominated by communities of *Festuca campestris*-*Geranium viscosissimum* and *Festuca campestris*-*Festuca idahoensis*, appeared suitable for the target taxa, particularly in the more mesic sites. However, no moonworts or other plant SOC were found. Based on the vegetation phenology, the July 25 survey date was likely too late in the season for locating *Botrychium* spp. during this dry summer. Additional surveys earlier in the field season may be warranted, along with surveys of the meadow north of Mannix Park in section 18.



Mannix Park

Grasslands North of Phillipsburg [primarily T7N, R13W, sec 7]

This montane grassland, dominated by communities of *Festuca campestris*-*Geranium viscosissimum* and *Festuca campestris*-*Festuca idahoensis*, was surveyed on July 19 by Steve Cooper and Scott Mincemoyer for plant SOC, primarily *Botrychium* spp. Additionally, the area was surveyed in 2005 and the grassland communities documented and described as part of those earlier surveys. At least one species of moonwort has been previously reported for the grasslands in section 7. However, no moonworts or other plant SOC were found during MTNHP surveys. Based on the vegetation phenology, the July 19 survey date was likely too late in the season for locating *Botrychium* spp. during this dry summer. Additional surveys earlier in the field season are needed to further document any moonworts in these grasslands.

Blackfoot River [T15N, R13W, sec 30]

This section of primarily BLM land was known to contain a small population of the globally rare *Grindelia howellii* (EO #37) in 1986, primarily along old logging roads. A survey in August 2006 failed to relocate any *G. howellii* at the site. This is not surprising, since this short-lived species tends to prefer sites that receive minor amounts of disturbance, and as a result, many occurrences tend to be transient or short-lived. In 1986, the site already contained several weedy species (*Centaurea maculosa*, *Cirsium arvense*, *Phleum pratense*, *Linaria vulgaris* and *Carduus nutans*). At this point, the site is not considered to be of conservation significance in terms of providing habitat for *Grindelia howellii*.

Additional Survey Areas

Preliminary surveys for SOC and significant vegetation types also occurred near Chamberlain Meadows, Kennedy Creek and Keno Creek in the Garnets in June and in the Scotchman Gulch area west of Phillipsburg in July. More thorough surveys are needed in Chamberlain Meadows proper, in the meadows at the upper end of Chamberlain Creek and in small riparian meadows along Wales Creek and its tributaries. Surveys of open slopes in the upper ends of Murray Creek and Douglas Creek drainages are also needed. The remaining BLM-managed lands in this part of the Garnet Range do not appear to contain vegetation types of particular significance, nor habitat that typically supports plant SOC.

Limited data on grassland communities in the Scotchman Gulch and West Fork Rock Creek areas were also collected in 2006. However, additional field visits and surveys for plant SOC are needed to accurately assess the significance of the area for both vegetation communities and plant SOC.

CONCLUSIONS

Combined surveys in 2005 and 2006 in the Hoodoo Mountains demonstrate the importance of the area for providing habitat for at least one plant SOC, *Polygonum austinae*. To date, five new occurrences of the species have been located on open scree slopes and in xeric grasslands on shallow, gravelly soils with sparse vegetation cover. As suitable habitat appears to be relatively common in the area and as of yet unsurveyed, additional occurrences are likely to be located. If this is the case, removal of *P. austinae* from SOC status in Montana may be warranted. The area may also provide valuable habitat for one additional SOC, *Polygonum polygaloides* ssp. *confertiflorum*. This recently added taxa to the SOC list is in need of additional review and information before conclusions about its status and significance in the area can be determined. Review of material at the University of Montana Herbarium and Montana State University Herbarium along with collection of additional field data from the area in 2007 should provide that information.

Cottonwood Meadow and the much smaller, un-named wetland along Rattler Gulch are examples of a resource type that appears to be uncommon on BLM lands managed by the Missoula Field Office. Even though neither wetland was found to be of significance in terms of providing habitat for plant SOC, nor is either one an uncommon wetland type in mountainous portions of the state, both provide valuable habitat for numerous plant and animal species, as well as providing critical wetland habitat and associated beneficial wetland functions.

Additional surveys for *Botrychium* species earlier in the growing season are still needed in intact mesic grassland types in the Flint Creek watershed and in the Hoodoo Mountains. Though habitat in the Hoodoo Mountains would appear to be suitable for hosting moonwort species, many similar grasslands in the state that appear suitable, are not known to host populations.

Surveys and monitoring of the globally rare, *Lesquerella carinata* var. *languida* in the south end of the Garnets and surveys for the taxa on BLM lands in the area around the West Fork of Rock Creek are recommended. Populations of this SOC may be in decline in the Garnets due to invasion of its habitat, primarily by spotted knapweed and by other weedy species. However, several years of monitoring data are needed to establish if any trends in population sizes are occurring. Additionally, previous reports of *Lesquerella paysonii* from USFS land at West Fork Buttes are incorrect and are actually *L. carinata* (P. Lesica pers. com. 2006). Adjacent BLM land appears likely to also contain populations and the area should be surveyed for this SOC, as well as others in June.

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APPENDIX A. LIST OF ASSOCIATED COMMON NAMES AND SYNONYMS

Scientific Name	Synonyms	Common Name
<i>Achillea millefolium</i>		common yarrow
<i>Agastache urticifolia</i>		nettleleaf horse-mint
<i>Agrostis exarata</i>		spike bentgrass
<i>Agoseris lackschewitzii</i>	<i>A. aurantiaca</i> var. <i>aurantiaca</i>	pink agoseris
<i>Alopecurus alpinus</i>		alpine timothy
<i>Angelica arguta</i>		Lyall's angelica
<i>Antennaria luzuloides</i>		woodrush pussytoes
<i>Artemisia ludoviciana</i>		prairie sage
<i>Aster foliaceus</i>	<i>Symphyotrichum foliaceum</i>	leafy-bract aster
<i>Aster modestus</i>	<i>Canadanthus modestus</i>	great northern aster
<i>Aster occidentalis</i>	<i>Symphyotrichum spathulatum</i>	western aster
<i>Botrychium</i> spp.		moonwort
<i>Calamagrostis canadensis</i>		bluejoint reedgrass
<i>Carduus nutans</i>		musk thistle
<i>Carex canescens</i>		gray sedge
<i>Carex leptalea</i>		bristle-stalked sedge
<i>Carex neurophora</i>		alpine nerved sedge
<i>Carex scopulorum</i> var. <i>bracteosa</i>		Rocky Mountain sedge
<i>Carex utriculata</i>	<i>C. rostrata</i> (mis-applied)	beaked sedge
<i>Centaurea maculosa</i>	<i>C. biebersteinii</i> , <i>C. stoebe</i>	spotted knapweed
<i>Cirsium arvense</i>		Canada thistle
<i>Deschampsia cespitosa</i>		tufted hairgrass
<i>Dodecatheon pulchellum</i>		few-flowered shooting star
<i>Elymus elymoides</i>	<i>Sitanion hystrix</i>	bottlebrush squirreltail
<i>Elymus spicatus</i>	<i>Agropyron spicatum</i> , <i>Pseudoroegneria spicata</i>	bluebunch wheatgrass
<i>Epilobium alpinum</i>	<i>E. anagallidifolium</i>	alpine willow-herb
<i>Epilobium ciliatum</i>		fringed willow-herb
<i>Equisetum arvense</i>		field horsetail
<i>Erigeron compositus</i>		cutleaf daisy
<i>Eriophorum chamissonis</i>		Chamisso's cottongrass
<i>Festuca campestris</i>	<i>F. scabrella</i> , <i>F. altaica</i>	rough fescue
<i>Festuca idahoensis</i>		Idaho fescue
<i>Galium bifolium</i>		twinleaf bedstraw
<i>Geranium viscosissimum</i>		sticky geranium
<i>Geum macrophyllum</i>		large-leaf avens
<i>Glyceria striata</i>		fowl mannagrass
<i>Grindelia howellii</i>		Howell's gumweed
<i>Habenaria dilatata</i>	<i>Platanthera dilatata</i>	White bog-orchid
<i>Heuchera cylindrica</i>		round-leaf alumroot
<i>Juniperus scopulorum</i>		Rocky Mountain Juniper
<i>Lesquerella carinata</i> var. <i>languida</i>	<i>Physaria carinata</i>	Garnet bladderpod
<i>Ligusticum tenuifolium</i>		slender-leaved licorice-root
<i>Linaria vulgaris</i>		butter-and-eggs

Scientific Name	Synonyms	Common Name
<i>Lonicera involucrata</i>		twinberry
<i>Mimulus guttatus</i>		yellow monkey-flower
<i>Mimulus moschatus</i>		muskflower
<i>Mimulus suksdorfii</i>		Suksdorf's monkey-flower
<i>Parnassia fimbriata</i>		fringed grass-of-parnassus
<i>Pedicularis groenlandica</i>		pink elephant's head
<i>Penstemon</i> sp		beardstongue
<i>Petasites sagittatus</i>		arrowleaf coltsfoot
<i>Phacelia</i> spp.		phacelia
<i>Phleum pratense</i>		common timothy
<i>Phlox</i> spp.		phlox
<i>Pinus ponderosa</i>		ponderosa pine
<i>Poa leptocoma</i>		bog bluegrass
<i>Poa secunda</i>	<i>P. sandbergii</i>	Sandberg's bluegrass
<i>Polygonum austinae</i>	<i>P. douglasii</i> var. <i>austinae</i>	Austin's knotweed
<i>Polygonum bistortoides</i>		American bistort
<i>Polygonum douglasii</i>		Douglas knotweed
<i>Polygonum polygaloides</i> ssp. <i>confertiflorum</i>	<i>P. confertiflorum</i>	dense-flowered knotweed
<i>Populus tremuloides</i>		quaking aspen
<i>Puccinellia pauciflora</i>	<i>Torreyochloa pallida</i>	weak alkaligrass
<i>Purshia tridentata</i>		antelope bitterbrush
<i>Pyrola uniflora</i>	<i>Moneses uniflora</i>	Single-flowered wintergreen
<i>Rhamnus alnifolia</i>		alder buckthorn
<i>Ribes hudsonianum</i>		stinking currant
<i>Ribes lacustre</i>		swamp gooseberry
<i>Rosa</i> spp.		rose
<i>Salix barclayi</i>		Barclay's willow
<i>Salix bebbiana</i>		Bebb's willow
<i>Salix boothii</i>	<i>S. myrtillofolia</i> (mis-applied)	Booth's willow
<i>Salix drummondiana</i>		Drummond's willow
<i>Salix geyeriana</i>		Geyer's willow
<i>Salix planifolia</i>	<i>S. phylicifolia</i> (mis-applied)	planeleaf willow
<i>Saxifraga odontoloma</i>	<i>S. arguta</i>	brook saxifrage
<i>Sedum stenopetalum</i>		stonecrop
<i>Senecio sphaerocephalus</i>		mountain marsh butterweed
<i>Trisetum wolfii</i>		beardless trisetum
<i>Veronica americana</i>		American speedwell